

**UFOs, Osborne Reynolds, and**  
**the One Wind:**  
**A New Look at an Old Theory**

**BY**

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## UFOs, Osborne Reynolds, and the One Wind: A New Look at an Old Theory

For in the sea of sky, My Love  
The moonships sail and fly, My Love  
And many are their kind, My Love  
Who all need but ONE WIND  
To make their starry ways  
To make their starry ways

And there will come a time, My Love  
Oh may it be in mine, My Love  
When men will proudly rise, My Love  
And forge to sail the skies  
Moonships from all the spheres  
Moonships from all the spheres

Verses 5 and 6 from "Voyage of the Moon" (BMI) by Donovan

I am a romantic scientist. The second verse above expresses a hope which is dear to my heart; a hope I have for the children of man. The first verse gives a hint as to how this hope might be realized. This paper expands on that hint.

In the winter of 1978-79 both the CIA and the USAF, having been sued under the U.S. Freedom of Information Act, released information (1,2) which indicates serious official interest in UFOs. The content of these releases strengthens the hypothesis that UFOs are advanced space vehicles of nonhuman manufacture, operated by intelligent aliens. This hypothesis has not generally found favor with scientists of the establishment, whom I call "Apologists". The Apologists restrict the range of admissible data to that which can be accounted for by their cherished theories. And this is useful. It allows the scientist to decide which anomalous observations are meaningful, correct, or valid and which are merely noise. In opposition to the Apologists, are the "Heretics" who are looking to make names for themselves. The Heretics look far and wide for phenomena which are poorly accounted for by current theory. Typically, reviewers of papers are Apologists. Therefore, they will reject this heretical paper because it accepts a category of anomalous data (UFOs) and espouses a radically different theory of the dynamics and structure of the universe. However, its acceptance or rejection is of little consequence. I believe that these ideas must ultimately prevail.

About ninety percent of UFO reports can be explained as misidentified natural or manmade phenomena, hoaxes, or hallucinations. The Heretic in me feels that there is scientific payoff in assuming that a large part of the remainder are advanced vehicles of nonhuman manufacture with propulsion systems and energy sources advanced, not only beyond the capability of existing

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technology; but also beyond human theoretical science of 1979. Henceforth, I will call them "UFOs".

People ask, "If these aerial aliens really exist, why don't they communicate with us?" My answer is that in allowing themselves to be seen and, in some cases, pursued; they are communicating. There have been numerous encounters between UFOs and military craft of the U.S. and many other countries (1,2). In these encounters the aliens seem to be playing sophomoric cat and mouse games; saying, in effect, "Nyah, Nyah, Nyah! Can't catch us! Can't catch us! You can't do what we can do!" The Heretic in me thinks that we are being given a Global IQ test in which the time taken to duplicate the UFOs, to do what the aliens can do, is a measure of our technological and scientific IQ. Well, if they can do it, we can too ... monkey see, monkey do! But monkey must first see. French Aviation Pioneer Gabriel Voisin warns (3), "These extraterrestrial explorers are separated from us by a gigantic barrier higher than the Himalayas - which is our retarded technical knowledge and our haughty ignorance." If the existence of this mountain is not accepted, how can it be scaled?

Mentioning many of the characteristics of UFOs which are inexplicable with current physical theory, J. Allen Hynek, Director of the Centre for UFO Studies in Evanston, Illinois, U.S.A., says in his book, *The UFO Experience* (4), "But there will surely be, we hope, a twenty-first century science and a thirtieth century science, and perhaps they will encompass the UFO phenomenon as twentieth century science has encompassed the aurora borealis, a feat unimaginable to nineteenth century science, which likewise was incapable of explaining how the stars and sun shine." His wait may soon be over. The heretical Apologist in me believes that a synthesis of nineteenth century and present day physical theory can explain the behaviour of UFOs. I am referring to Osborne Reynolds' mechanical aether theory and its integration with relativity and quantum theories. My goal is to show the extraordinary explanatory power of this theory and to demonstrate that it is the Holy Grail of Physics; a theory unifying all physical phenomena.

Osborne Reynolds, F.R.S. (1842-1912), a British engineer and educator, earned the respect of his peers and the devotion of his students. Today he is recognized mainly for his contributions to the study of fluid flow (5,6); but Reynolds perceived these as only preliminaries to his grand synthesis - an axiomatic theory of a particulate aether. Reynolds was disappointed because his peers neither understood his theory nor shared his perception of its value (7). Also, he was competing for attention with the many major discoveries which followed one upon the other at the dynamic turn of the century. Now, 76 years later, will Reynolds have a more sympathetic audience?

In 1903 Cambridge University Press published the third volume of Reynolds' collected works, *"On The Submechanics of the Universe"* (8). This was two years ahead of Einstein's special theory of relativity. Einstein devoted the latter part of his career to the formulation of a theory which could subsume all physical phenomena under a single rubric. He failed. It hardly seems possible that Einstein was unaware of Reynolds' theory; but would he have failed if he had been aware of it? Historically, there has been competition between British and German scientists.

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Heretically speaking, I feel Reynolds' contributions have been equal to or, perhaps, greater than Einstein's. British scientists should espouse Reynolds' theory as a matter of national pride!

Reynolds titled his "popular" lecture of 1902, "On an Inversion of Ideas as to the Structure of the Universe". Current science pictures tiny, 'hard' particles zooming around in a lot of nothing (space) somehow mysteriously interacting with photons and nuclear, electric, magnetic, and assorted other forces. Reynolds' inversion, on the other hand, envisions dynamic systems of negative dislocations (holes) zooming around in a lot of something (a quasigaseous, quasicrystalline, dilatant medium) interacting with transverse vibrations (photons) and different types of stresses in the medium (nuclear, electric, magnetic, etc. forces). This theory is compatible with both relativity and quantum theories. It is an aether which was not demolished by the Michelson-Morley (M-M) experimental results.

Today, theories of the luminiferous aether are not in vogue among Apologist physicists. They say that the M-M experiment disproved and that relativity theory did away with the need for an aether. It is true that M-M results disproved some aether theories; but the type of aether proposed by Reynolds, far from being disproven, actually permits visualization of the mechanism whereby the speed of light remains a constant. Here is a demonstration.

As Einstein has shown, the observed speed of light is always a constant because the length of an object contracts in the direction of motion and its local time rate slows in perfect balance. Reynolds' theory enables me to show that the mechanism whereby this occurs is inherent in the very structure and dynamics of the medium.

This medium is granular, composed of uniform, spherical grains much smaller than subatomic particles and filling the entire universe. In fact, it is the universe. In matter-free space the grains are hexagonally arrayed and almost close-packed. Because they cannot exchange neighbors, they form a quasicrystalline matrix. The grains are in relative, vibratory, gas-like motion; but with a mean free path many orders of magnitude smaller than the diameter of the grains (unlike a gas). This jostling of the grains against one another produces a very high pressure in the medium. Because of the gearing of the grains and the pressure, the medium supports transverse disturbances (EM waves) whose local propagation rate depends on the local pressure and strains in the medium. Unstrained; i.e., without matter, the aether is isotropic. Strained; i.e., with matter present, it is anisotropic.

Reynolds says matter is strained regions of misalignment of the grains or "singular surfaces", "negative inequalities", or simply, "holes". Matter, then, moves by means of displacement; much as a bubble moves upward by an equal amount of liquid being displaced downward. For holes to move through the medium, aether grains must move in the opposite direction.

Picture a void or hole having two plane, parallel faces. For this hole to move in a direction perpendicular to the faces, aether grains must leave the forward face and travel to the rear face of the hole. Since the distance the grains must travel is larger than the normal grain spacing and

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since they travel at a limited velocity, the grains spend a certain amount of time in transit across the singular surface. While in transit, the grains do not vibrate against other grains and their energy is momentarily unavailable to the rest of the medium.

As the hole moves faster, the number of grains in transit across it increases. This causes a local decrease in aether pressure. Also, as more grains leave the front face, it experiences a loss of pressure and produces an aether strain tending to cause the front face to approach the rear face. This results in a contraction of the hole (matter) in the direction of motion. VOILA! THE LORENTZ-FITZGERALD CONTRACTION!

The vibration rate of the grains determines the aether pressure and this determines the rate at which light waves are propagated. The faster light travels in the medium, the greater the rate of passage of time. Thus, if the motion of matter through the medium decreases the local aether pressure, it also causes local time to slow. VOILA! TIME EXPANSION!

As the speed of the hole approaches the mean velocity of the grains (which, in part, determines the speed of light) the local aether pressure approaches a value close to zero. Reynolds identifies gravitational and inertial effects with the inward, radially directed aether strain on a volume containing holes (matter) and the dilatation this strain produces. As the local aether pressure drops to a low value, the aether strain rises to a high value. This aether strain increase is synonymous with a mass increase. VOILA! THE INCREASE IN MASS WITH VELOCITY!

The above explanations are, admittedly, intuitive, nonmathematical, and analogical. But, until today, has there ever been a model which could provide such a visualization of the manner in which motion causes distortion of the space-time continuum (in this case "discontinuum" or "quantinum")? This is what I like about Reynolds' theory. It makes possible the visualization of phenomena, which formerly were grasped mainly by mathematical relationships. "Don't try to picture it; the equation is the whole reality", is a point of view which promulgates mystery in physics. Reynolds' theory can demystify physics and bring to bear, once again, that powerful human faculty of visualization to the subject. In this simple, elegant model, the pressure of the aether, the interlocking structure of the aether grains, and dilatation attending strains in the medium are first order effects. All of the known physical phenomena are higher order effects deriving from these first order effects.

In the above paragraphs I have given intuitive explanations for the constant velocity of light, the Lorentz-Fitzgerald contraction, time expansion, and the increase in mass with velocity. Reynolds' quasicaseous, quasicrystalline, dilatant medium can also provide mechanical, kinetic, structural, and thermodynamic explanations for:

1. the mechanism of gravity,
2. the equivalence between gravitational and inertial mass,
3. the wave-particle duality of EM radiation,
4. the different ranges of the physical forces,

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5. nonradiating orbits of electrons around the nucleus,
6. mass-energy interconversion,
7. the numerical relationships between physical constants, etc.

I feel unqualified to speak as an Apologist in defense of Reynolds' heretical theory. In his Magnum Opus, he starts from fundamental axioms and produces many detailed analytical, mathematical derivations. Although I have some small skill in mathematics, most of his equations involving multiple integrals and differentials are beyond me. For this reason, I will not include any of his analytical results here. However, I do feel that the intuitive, descriptive material above should be augmented with some of the quantitative results of the theory. On the basis of empirical data circa 1900, Reynolds computed values for the parameters of his model of the aether. These values may lead to conclusions which disagree with our current knowledge of the universe. It must be stressed that such disagreement might be eliminated by choice of a different set of parameter values without invalidating the model, itself. Reynolds' computed values (in C.G.S. units) are:

Grain Diameter =  $5.534 \times 10^{-18}$   
Mean Relative Velocities of the Grains =  $6.777 \times 10$   
Mean Path of the Grains =  $8.612 \times 10^{-28}$   
Mean Density of the Medium =  $10^4$   
Coefficient of Transverse Elasticity =  $9.03 \times 10^{24}$   
Rate of the Transverse (EM Shear) Wave =  $3.004 \times 10^{10}$   
Rate of the Normal (Compression) Wave =  $7.161 \times 10^{10}$   
Time to Cut Transverse Wave Energy from 1 to  $1/e^2$  =  $1.785 \times 10^{15}$   
Time to Reduce Normal Wave Energy from 1 to  $1/e^2$  =  $3.923 \times 10^{-6}$ .

On the basis of the above parameter values, I calculated some figures which agree reasonably well with known physical measures. I obtained a value close to  $10^{-48}$  grams for the mass of the grain. This value is the same as the upper mass limit for the photon as determined by de Broglie and Vigier in 1972 (10). The diameter for the smallest sphere of grains which could detach itself from the rest of the grains in the medium and rotate independently, which I call the 'mean free sphere', I calculated to be  $3.5 \times 10^{-8}$  cm. This is close to the measured value for atomic diameters. The mass of a minimal shell around the mean free sphere came to  $4.3 \times 10^{-28}$  grams; again, not too far from the measured electron mass of  $9.1 \times 10^{-28}$  grams. These rough numerical agreements are not offered as proof of the theory. However, they are suggestive enough that I hope those more qualified than I am will be motivated to examine Reynolds' aether more closely.

Fortunately, not all established scientists are anti-aether. Dirac has demonstrated analytically that the existence of an aether is not ruled out by quantum theory (11). Bohm, de Broglie, and Vigier (12) have postulated the existence of a subquantal medium, which according to Bohm's interpretation (13), is surprisingly similar to Reynolds' aether. These friends of the aether seem not to have known about Reynolds. At least I found no reference to his work in any of their papers. Both aether theories envision a structured matrix with a graininess much finer than

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subatomic particles. In Bohm's medium, elementary particles are analogous to dislocations in a crystalline matrix. He says that there are enough different types of dislocations in crystals to account for the number of known elementary particles.

The stress fields in the crystal are analogous to the various physical forces exerted by the particle. The particle cannot exist without the stress fields, nor the stress fields without the particle. Hiley (14) references Frank (15) who has shown in a theoretical analysis that a Burgers screw dislocation moving through a crystal experiences all the relativistic effects, which can be determined by a substitution of the transverse velocity of sound in the crystal for the speed of light. The Zeitgeist is moving in the direction of Reynolds.

How does Reynolds' aether relate to UFOs? By now you have probably guessed that the romantic me equates "moonships" with UFOs and the "one wind" with the pressure of the aether. UFOs have displayed behaviours which indicate that they operate by altering the local metric of space-time. Extreme accelerations, antigravity effects, bending of light beams, alteration of time, changes of shape, and unusual EM interference have all been associated with UFO sightings. Hypersonic velocities without sonic booms and extreme accelerations without killing the occupants require that UFOs operate by means of a field which acts equally on all the contents of the vehicle and also on the atmosphere in its vicinity. Extreme velocities without sonic booms could then be achieved since at increasing distances from the UFO decreasing field strength would move less and less atmosphere along with it. Several photographs have shown UFOs surrounded by clouds or mist. A decrease in atmospheric pressure can produce condensation of moisture. An increase of aether pressure in the vicinity of the UFO would cause a drop in atmospheric pressure. These and many similar observations when viewed from the perspective of Reynolds' aether theory can provide a basis for the design of a moonship.

The first three decades of the twentieth century were rich with theoretical advances in physics. Since that time, technology has developed the practical applications of these new theories. It seems that the new lands charted by these theories are well explored and cultivated. There remain few new vistas. The time has come for a new perspective; for a revitalized vision of the physical world. This is what I believe Reynolds' theory has to offer. It allows for the possibility of:

1. control of gravity or levitation of physical objects,
2. control of inertia or mass of physical objects,
3. control of the local metric of space,
4. a space drive not requiring expulsion of reaction mass,
5. control of the rate of passage of time within a volume of space,
6. signal propagation at 2.4 times the speed of light,
7. an inexhaustible source of energy,
8. a radically changed cosmology, and who knows what else?

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Isn't this just what one might need to build a moonship? Much theoretical and applied research will be necessary to realize any of these possibilities. But, just knowing that they exist, will infuse new vitality into our physics and, further, our entire civilization. Even if one chooses to discount the UFO evidence, there is sufficient justification in the above possibilities for serious consideration of Reynolds' aether as a paradigm upon which a new physics for the third millennium may be built. "And there will come a time, My Love. Oh may it be in mine" Oh may it be in mine.

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